32. Use of the peptide obtained by the process according to claim 25, as a biomaterial which is a constituent of implants, prostheses, dressings, artificial tissues, a bioencapsulation system, a biocompatibilizing coating, suture threads, adhesives or surgical cements or a cell culture support.

33. Use of the peptide obtained by the process according to claim 26, as a biomaterial which is a constituent of implants, prostheses, dressings, artificial tissues, a bioencapsulation system, a biocompatibilizing coating, suture threads, adhesives or surgical cements or a cell culture support.

34. Use of the peptide obtained by the process according to claim 27, as a biomaterial which is a constituent of implants, prostheses, dressings, artificial tissues, a bioencapsulation system, a biocompatibilizing coating, suture threads, adhesives or surgical cements or a cell culture support.

REMARKS

The claims have been amended to delete all multiple dependencies.

Respectfully submitted.

Date: 8/28/01

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WHAT IS CLAIMED IS:

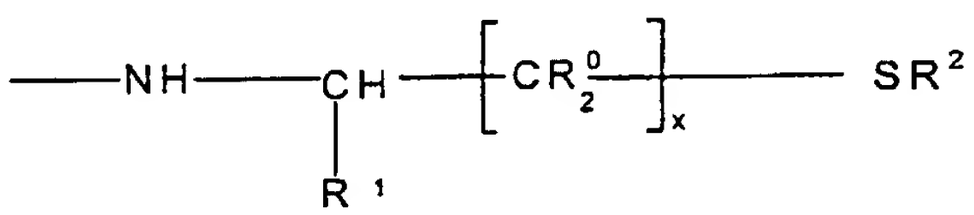
13. A collagenic peptide modified by grafting free or substituted thiol functions borne by mercaptoamino residues, characterized:

♦ in that these mercaptoamino residues are identical to or different than each other and are exclusively grafted onto the aspartic acids and glutamic acids of the collagenic chain via amide bonds, and

♦ in that it is soluble in aqueous medium and/or in polar solvents.

14. The collagenic peptide according to claim 13 characterized in that at least some of the mercaptoamino residues, grafted onto the carboxylic acids of the aspartic acids and glutamic acids, correspond to the general formula (I) below:

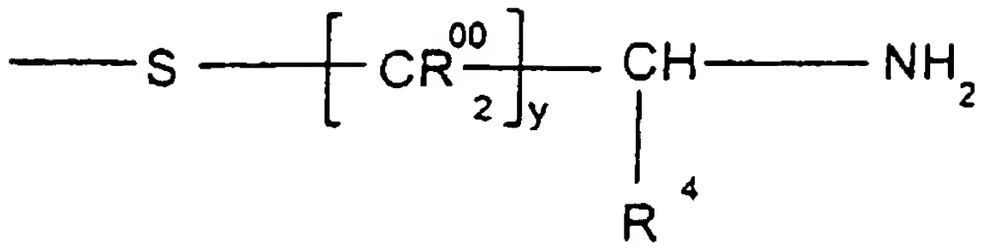
FORMULA (I)



in which

- x = 1 or 2;
- R^0 = H or CH_3;
- R^1 represents H or $COOR^3$ with R^3 corresponding to a hydrocarbon-based radical of aliphatic, aromatic or alicyclic type, preferably alkyl, alkenyl, aryl, aralkyl, alkylaryl or alkenylaryl type and even more preferably of methyl or ethyl type;
- R^2 is an aliphatic and/or alicyclic and/or aromatic radical, preferably an alkyl or an acyl optionally containing sulfur and/or amino, and even more preferably R^2 corresponds to formula (II) below:

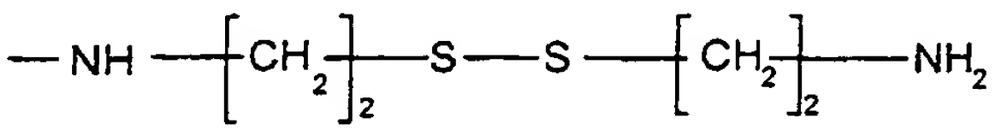
FORMULA (II)



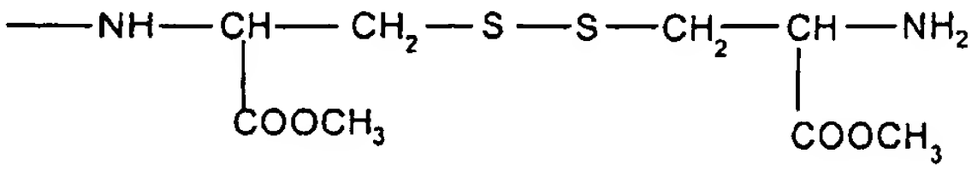
with y, R^{00} and R^4 corresponding to the same definition as that given in the legend in formula (I) for x, R^0 and R^1.

15. The collagenic peptide according to claim 14, characterized in that the grafted mercaptoamino residues are chosen from the following group of radicals:

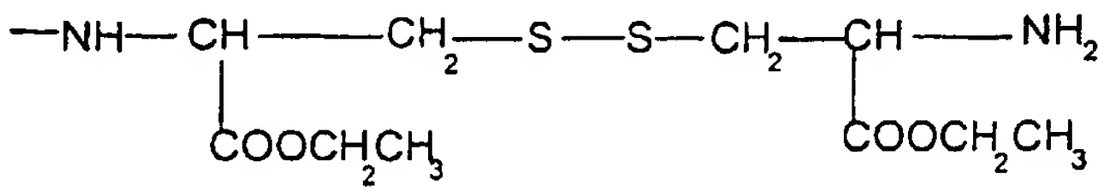
FORMULA (I.1)



FORMULA (I.2)



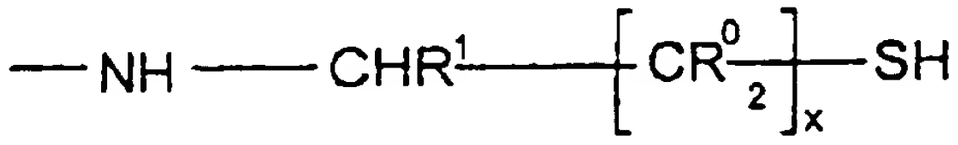
FORMULA (I.3)



16. The collagenic peptide according to claim 13 characterized

♦ in that at least some of the mercaptoamino residues, grafted onto the carboxylic acids of the aspartic acids and glutamic acids, correspond to the general formula (I') below:

FORMULA (I')



in which

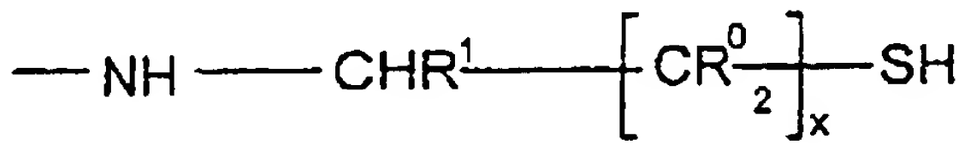
- x = 1 or 2;
- R^0 = H or CH_3;
- R^1 represents H or $COOR^3$ with R^3 corresponding to a hydrocarbon-based radical of aliphatic, aromatic or alicyclic type, and

♦ in that it is crosslinkable.

17. The collagenic peptide according to claim 13, characterized

♦ in that it comprises mercaptoamino residues of formula (I') below:

FORMULA (I')



in which

- x = 1 or 2;
- R^0 = H or CH_3;
- R^1 represents H or $COOR^3$ with R^3 corresponding to a hydrocarbon-based radical of aliphatic, aromatic or alicyclic type, hydrogen or a cation capable of forming a salt with COO^-, and

♦ in that it is crosslinkable.

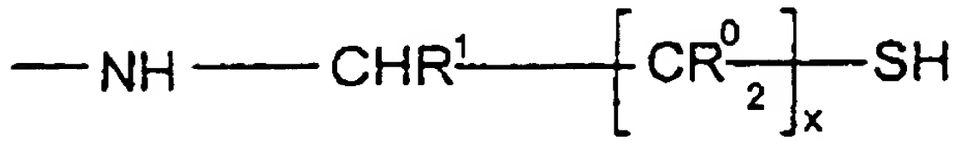
18. A crosslinked collagenic peptide, characterized

♦ in that it comprises collagenic chains linked together by disulfide bridges in which the constituent sulfur atoms belong to mercaptoamino residues that are exclusively grafted onto the aspartic acids and glutamic acids of the collagenic chains via amide bonds;

♦ in that is obtained from the collagenic peptide of which at least some of the mercaptoamino residues, grafted onto the carboxylic acids of the aspartic acids and

glutamic acids, correspond to the general formula (I') below:

FORMULA (I')

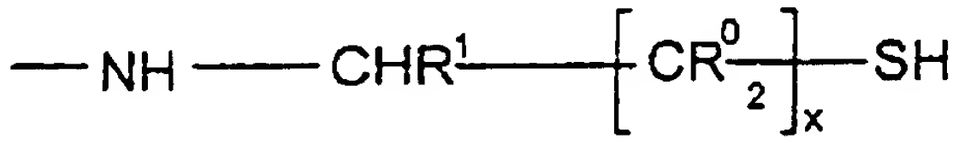


in which

- x = 1 or 2;
- R^0 = H or CH_3;
- R^1 represents H or $COOR^3$ with R^3 corresponding to a hydrocarbon-based radical of aliphatic, aromatic or alicyclic type, and which is crosslinkable.

19. A crosslinked collagenic peptide according to claim 18, characterized in that is also obtained from the collagenic peptide, which comprises mercaptoamino residues of formula (I') below:

FORMULA (I')



in which

- x = 1 or 2;
- R^0 = H or CH_3;
- R^1 represents H or $COOR^3$ with R^3 corresponding to a hydrocarbon-based radical of aliphatic, aromatic or alicyclic type, hydrogen or a cation capable of forming a salt with COO^-, and which is crosslinkable.

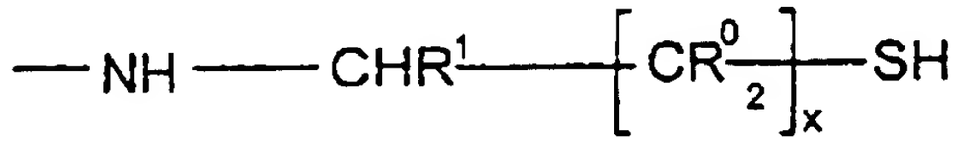
20. A crosslinked collagenic peptide, characterized

- in that it comprises collagenic chains linked together by disulfide bridges in which the constituent sulfur atoms belong to mercaptoamino residues that are exclusively grafted onto the aspartic acids and

glutamic acids of the collagenic chains via amide bonds.

- in that is obtained from the collagenic peptide, which comprises mercaptoamino residues of formula (I') below:

FORMULA (I')



in which

- x = 1 or 2;
- R^0 = H or CH_3;
- R^1 represents H or $COOR^3$ with R^3 corresponding to a hydrocarbon-based radical of aliphatic, aromatic or alicyclic type, hydrogen or a cation capable of forming a salt with COO^-, and which is crosslinkable.

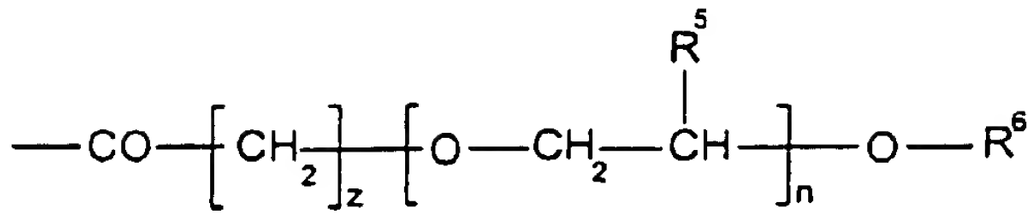
A/ cont.

21. The collagenic peptide according to claim 13, characterized in that it comprises grafts G, which are different than mercaptoamino residues, attached to at least some of the free amine moieties of the collagenic chain, via amide bonds, G being an acyl comprising a hydrocarbon-based species.

22. The collagenic peptide according to claim 13, characterized in that it comprises grafts G, which are different than mercaptoamino residues, attached to at least some of the free amine moieties of the collagenic chain, via amide bonds, G being an acyl comprising hetero atoms (advantageously O and/or N).

23. The collagenic peptide according to claim 21, characterized in that G is an acyl being chosen from alkyls and/or alkenyls and/or alicyclics and/or aromatics or corresponding to the formula (III) below:

FORMULA (**III**)



with

- R^5 = H or CH_3;
- R^6 = H or a linear or branched alkyl;
- z = 0, 1 or 2 and n > 0 and n is chosen such that the molecular weight of the polymer chain is between 100 and 15 000.

24. A process for obtaining a collagenic peptide which is soluble in aqueous medium and/or in polar solvents and modified by grafting substituted thiol functions borne by mercaptoamino residues,
characterized in that it consists essentially in reacting in solution exclusively the carboxylic functions of the aspartic acids and glutamic acids of a collagenic peptide with at least one precursor of a mercaptoamino residue in which the thiol function and the possible carboxylic function are blocked, in the presence of at least one grafting agent chosen from the group comprising products that activate carboxylic groups.

25. A process for preparing a crosslinkable collagenic peptide, modified by grafting free thiol functions borne by mercaptoamino residues, characterized in that it consists essentially:

1. in reacting in solution exclusively the carboxylic functions of the aspartic acids and glutamic acids of a collagenic peptide with at least one precursor of a mercaptoamino residue whose thiol function and possible carboxylic function are blocked, in the presence of at least one grafting agent chosen from

the group comprising products that activate carboxylic groups,

2. and in deprotecting (conversion to thiols) the mercapto functions of the mercaptoamino residues grafted onto the modified collagenic peptides obtained in step 1.

26. A process for preparing a crosslinked collagenic peptide from a collagenic peptide modified by grafting free thiol functions borne by mercaptoamino residues, characterized in that it consists essentially:

1. in reacting in solution exclusively the carboxylic functions of the aspartic acids and glutamic acids of a collagenic peptide with at least one precursor of a mercaptoamino residue whose thiol function and possible carboxylic function are blocked, in the presence of at least one grafting agent chosen from the group comprising products that activate carboxylic groups,
2. and in deprotecting (conversion to thiols) the mercapto functions of the mercaptoamino residues grafted onto the modified collagenic peptides obtained in step 1,
3. and in oxidizing the thiol functions of the crosslinkable modified collagenic peptide obtained in step 2, so as to form intercatenary disulfide bridges.

27. The process according to claim 24, characterized in that an additional step F is envisaged, this being a step of functionalization with grafts G that are different in nature from the grafts attached to the carboxylic functions of the aspartic acids and glutamic acids, this step F consisting essentially in carrying out an acylation of at least some of the free amine functions of the collagenic chain, so as to attach thereto grafts G comprising a hydrocarbon-based species, so as to attach to these amines

grafts G comprising a hydrocarbon-based species.

28. The process according to claim 25, characterized in that an additional step F is envisaged, this being a step of functionalization with grafts G that are different in nature from the grafts attached to the carboxylic functions of the aspartic acids and glutamic acids, this step F consisting essentially in carrying out an acylation of at least some of the free amine functions of the collagenic chain, so as to attach thereto grafts G comprising a hydrocarbon-based species, so as to attach to these amines grafts G comprising a hydrocarbon-based species.

29. The process according to claim 26, characterized in that an additional step F is envisaged, this being a step of functionalization with grafts G that are different in nature from the grafts attached to the carboxylic functions of the aspartic acids and glutamic acids, this step F consisting essentially in carrying out an acylation of at least some of the free amine functions of the collagenic chain, so as to attach thereto grafts G comprising a hydrocarbon-based species, so as to attach to these amines grafts G comprising a hydrocarbon-based species.

30. Use of the collagenic peptides according to claim 13 as a biomaterial which is a constituent of implants, prostheses, dressings, artificial tissues, a bioencapsulation system, a biocompatibilizing coating, suture threads, adhesives or surgical cements or a cell culture support.

31. Use of the peptide obtained by the process according to claim 24, as a biomaterial which is a constituent of implants, prostheses, dressings, artificial tissues, a bioencapsulation system, a biocompatibilizing coating, suture threads, adhesives or surgical cements or a cell culture support.